Standard Update

Better Data Through Standards

EPA

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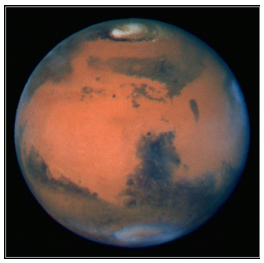
*The **Standard Update**, EPA s newsletter about data standards, contains information you can read and reuse whatever your interest in information management may be. For more information on any newsletter topic, see the Environmental Data Registry (EDR) Website at **http://www.epa.gov/edr/**. The EDR Website is your source for **Standard Update** back issues and a vehicle for reader comments.*

Metadata—Understanding its Meaning and Uses

Measurement Metadata Mixup Makes for Mission Mishap

NASA lost its $125 million Mars Climate Orbiter because one group of engineers used kilograms and meters, while another used pounds and feet. The error caused the spacecraft to fly too close to the Martian surface, where it either burned up or broke up as it swung around the planet. It wasn't the data that was faulty; it was the *metadata*.



Source: NASA/JPL/MSSS

What is Metadata?

Metadata is plain, ordinary, everyday, garden variety data. The concept of metadata is often confusing, partly because it lacks a clear definition. Metadata is a type of data that describes and defines other data, but what makes it different from ordinary data is how it is used. It is found in documents, messages, images, sound streams, and videos. The term metadata or "data about data" also refers to data that are used to describe a data set, such as the content, quality, and condition of data. It is the information that answers questions like: Who owns the data? How was the data collected? How current is the data? It is a set of facts about data and other information elements. It is everything except for the data itself, and it is undeniably important—especially if you are flying too close to Mars!

The Value of Metadata

Metadata is quickly becoming a major data management tool because it helps us to find information and determine how best to use it. It is a fundamental component of data management. It enables the user to link directly to online data and encourages opportunities for collaboration. Moreover, it helps us understand information critical to the success of data sharing. Other values of metadata are that it:

- Allows all information about the data set to be in one place and in one format.
- Identifies the custodian of the data.
- Reduces the risk of duplicating data sets.
- Allows for feedback.
- Provides information for data translation.
- Provides international exposure for research and makes data sharing easy.
- Provides concise descriptions of data sets.

What Kinds of Metadata Are There?

There is metadata that shows the user where to find information, how to access it, and what its quality is. Metadata can be used by non-technical users to interact with the data and run complex queries and reports.

Additional kinds of metadata include:

- Information in a word processing file as well as the word processing system.
- Information in an e-mail message as well as the e-mail message system.
- Information in an image as well as the video and video system.
- Information in Web pages as well as the Web site and their use.
- Information associated with geo-spatial data that describes the data's methodology and accuracy.

System developers use metadata to add meaning to data stored in information systems and make them more useful.

Data Warehouse developers can use metadata for metrics to aid in the data warehouse maintenance and performance.

How is Metadata Used?

The major uses of metadata are:

- To help organize and maintain an organization's investment in data.
- To provide a consistent set of key words to feed agency search engines.
- To provide needed information for sharing and reusing information.

How Does EPA Use Metadata?

EPA uses metadata to accomplish its information management objectives such as managing information as a valuable strategic resource, enhancing the value of data by ensuring its accuracy, integrity, and availability, performing information and data management activities in an integrated, efficient, effective, and economical way. It also maximizes the information and data usefulness, improves service delivery to the public and reduces information collection burden on the public.

Using metadata helps EPA recognize changes in the technical, legal, and operational environment when managing information technology.

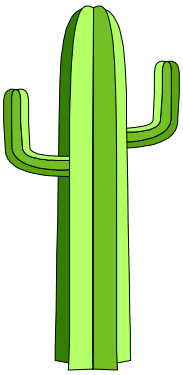
EPA shares metadata to improve the compatibility and efficiency of Agency information systems and improve access to Agency information and data resources for all potential users, including the public.

To summarize: *Metadata helps us find information, and it enables us to better describe and share information.*

Open Forum on Metadata Registries

All are invited to explore Metadata further at: *The Open Forum on Metadata Registries, hosted by the U.S. Environmental Protection Agency, January 17-21, 2000 in Santa Fe, New Mexico, USA.*

Participants from private enterprise, government, academia, and standards organizations will explore the capabilities, uses, content, development, and operation of metadata registries. The Environmental Track of the Forum will highlight collaboration with State environmental agencies as part of the State Environmental Data Exchange Strategy (SEDES).



For full information or to register as a participant, see the Open Forum Web site at:

http://www.nist.gov/openforum2000/

For additional information on Agency data standards activities, contact Marian Cody via e-mail at cody.marian@epa.gov or by phone at (202) 260-5110.